



**Third United Nations
International Conference
on the Peaceful Uses
of Atomic Energy**

A/CONF.28/A/746

INDIA

February 1964

Original: ENGLISH

Confidential until official release during Conference

Abstract

TARAPUR ATOMIC POWER PROJECT

**THE INTEGRATION OF NUCLEAR POWER STATIONS IN POWER NETWORKS
WITH SPECIAL REFERENCE TO THE DEVELOPING COUNTRIES**

**Shri M. N. Chakravarti, Project Administrator, and
M. Dayal, Senior Design Engineer**

The introduction of nuclear power stations into power systems raises a number of problems of a technical and economic nature which have important bearings on the economy of the networks, their growth and the distribution of hydro, thermal and nuclear capacity with reference to present and future conditions. The paper discusses the various factors that have to be taken into account in deciding the role of atomic power in a power system such as size of system and units, availability factor, system load factor, storage hydro availability, operating costs, etc. The general problem of operating nuclear power stations in a power system consisting of hydro, thermal and nuclear stations is considered. The installation of sequences of nuclear and conventional power stations, and the economics of the system as a whole, are examined; the relative roles of various types of stations in meeting the load and energy requirements, both present and future, are investigated. The applicability of these methods of examination to the special problems of developing countries is examined.

The costs of nuclear and conventional stations in India are examined from the system point of view and cost comparisons between sequences of nuclear and conventional power stations discussed. Three specific power systems in India are considered in detail. These are the Western regional system, the Northern system and the Southern regional system. In these areas nuclear power stations aggregating 1.2 million kilowatts are to be installed by 1971. Examination reveals that these nuclear stations and others to be built thereafter could take the future base load in these regions and also part of the energy requirements at lower plant factors and

that maximum economies would be achieved for the systems by the installation of progressively increasing amounts of nuclear power. The paper evolves and formulates criteria which can be used, particularly by the developing countries in studying the introduction and the future role of nuclear power in power networks.